

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (currently amended): A hair dye composition comprising the following ingredients (A) and (B):

(A) at least one a compound having a 5 or 6 membered lactone skeleton selected from the group consisting of γ -hexanolactone , γ -heptanolactone and a mixture thereof and
(B) an acid dye; and
having a pH of from 2 to 6 and a buffer capacity not lower than 0.004 gram equivalent/L but lower than 0.2 gram equivalent/L as measured in a form of a tenfold dilute aqueous solution.

Claim 2 (currently amended): A The hair dye composition according to claim 1, further comprising the following ingredient (C):

(C) a fragrance composition comprising a combination of a fragrance substance having a ClogP value not greater than 1.5 and another fragrance substance having a ClogP value not smaller than 3.0.

Claim 3 (currently amended): A The hair dye composition according to claim 1 or 2, further comprising the following ingredient (D):

(D) at least one organic solvent selected from benzyloxy ethanol, benzyl alcohol, phenoxyethanol, phenoxyisopropanol, benzyl glycerol, N-benzyl-formamide, cinnamyl alcohol, phenethyl alcohol, p-anisyl alcohol, ethanol, 1-propanol, 2-propanol, 1-butanol, butoxyethanol, p-methylbenzyl alcohol, methyl carbitol, ethyl carbitol, or propyl carbitol.

Claim 4 (cancelled)

Claim 5 (cancelled)

Claim 6 (currently amended): A The hair dye composition according to claim 1 or 2, comprising Acid Orange 7 as said ingredient (B).

Claim 7 (original): A method of dyeing hair, which comprises applying onto said hair a hair dye composition according to claim 1 or 2.

Claim 8 (new): The hair dye composition of claim 1, wherein, component (A) is present in an amount of 0.5 to 50 wt.%.

Claim 9 (new) The hair dye composition of claim 1, wherein, component (B) is present in an amount of 0.05 to 5 wt.%.

Claim 10 (new) The hair dye composition of claim 1, wherein, said pH is from 2 to 5.

Claim 11 (new) The hair dye composition of claim 1, wherein, said buffer capacity is not lower than 0.01 gram equivalent/L.

Claim 12 (new) The hair dye composition of claim 1, wherein, said buffer capacity is not lower than 0.015 gram equivalent/L.

Claim 13 (new) The hair dye composition of claim 1, further comprising a water-soluble high-molecular weight substance.

Claim 14 (new) The hair dye composition of claim 13, wherein, said a water-soluble high-molecular weight substance is at least one substance selected from the group consisting of gum Arabic, carrageenan, karaya gum, tragacanth gum, carob gum, quince seeds (marmelo), casein, dextrin, gelatin, sodium pectate, sodium alginate, methylcellulose, ethylcellulose, carboxymethyl-cellulose, hydroxyethylcellulose, hydroxypropyl-cellulose, polyvinyl alcohol, poly(vinyl methyl ether), polyvinyl pyrrolidone, sodium polyacrylate, locust bean gum, guar gum, tamarind gum, dialkyldimethylammonium cellulose sulfates, xanthan gum, modified xanthan gum, wellan gum, lavor gum, gellan gum, carboxyvinyl polymer, acrylate ester/methacrylate ester copolymers, a partial crosslinking product of methyl vinyl ether/maleic anhydride copolymer by 1,9-decadiene, polyethylene glycol, magnesiumaluminumsilicate, bentonite and a mixture thereof.

Claim 15 (new) The hair dye composition of claim 13, wherein said a water-soluble high-molecular weight substance is present in an amount of 0.1 to 10 wt.%.

Claim 16 (new) The hair dye composition of claim 13, further comprising at least one alcohol selected from the group consisting of a lower alcohol or polyol.

Claim 17 (new) The hair dye composition of claim 16, wherein said alcohol is selected from the group consisting of ethanol, 2-propanol, 1-propanol, 1-butanol, ethylene glycol, propylene glycol, isopropylene glycol, 1,3-butylene glycol, glycerine and a mixture thereof.

Claim 18 (new) The hair dye composition of claim 16, wherein said alcohol is present in an amount of 0.1 to 30 wt.%.

SUPPORT FOR THE AMENDMENT

Support for the amendment to Claim 1 is found in Claim 5 as originally presented.

Support for claim 8 is found on page 4, lines 19-24 of the specification. Support for claim 9 is found on page 6, lines 5-7 -24 of the specification. Support for claim 10 is found on page 6, line 14 of the specification. Support for claim 11 is found on page 6, line 21 of the specification. Support for claim 12 is found on page 6, line 22 of the specification. Support for claim 13 is found beginning at page 14, line 25 through page 15, line 2 of the specification. Support for claim 14 is found on page 15, lines 2-15 of the specification. Support for claim 15 is found on page 15, line 18 of the specification. Support for claim 16 is found on page 15, lines 20-23 of the specification. Support for claim 17 is found beginning at page 15, line 24 through page 16, line 1 of the specification. Support for claim 18 is found on page 16, line 4 of the specification. No new matter would be added to this application by entry of this amendment.

Upon entry of this amendment, Claims 1-3 and 6-18 will now be active in this application.

REQUEST FOR RECONSIDERATION

The present invention is directed to a hair dye composition.

Acidic hair dye compositions containing penetrating solvents have suffered from a tendency to stain the scalp and skin during use. The use of thickening agents to prevent dripping, and therefore reduce staining of the skin has been unable to bring about any substantial solution to the problem. While alkylene carbonates have been used to reduce the tendency of staining of the skin, the inclusion of alkylene carbonates provides for an acidic hair dye composition of poor storage stability. As such, acidic hair dye compositions with a low tendency for staining the skin are sought.

The present invention addresses this problem by providing an acidic hair dye composition comprising an acidic dye and either γ -hexanolactone or γ -heptanolactone. Applicants have discovered that both of these compounds provide for an effective acidic hair dye composition. Such a hair dye composition is nowhere disclosed or suggested in the cited prior art of record.

The rejection of Claims 1-5 and 7 under 35 U.S.C. § 103(a) over Hirayama et al., JP 10-231,234 in view of Atsuni et al. EP 1,022,014 and of Claim 6 under 35 U.S.C. § 103(a) in further view of Yoshihara et al. U.S. 5,332,581 are respectfully traversed.

None of the cited prior art of record discloses or suggests an acidic hair dye composition containing an acidic hair dye as well as γ -hexanolactone or γ -heptanolactone.

JP 10-231,234 describes an acidic hair dye composition comprising a fragrance. Suitable fragrances appear to include γ -undecalactone. There is no disclosure of γ -hexanolactone or γ -heptanolactone in this reference.

In contrast, the present invention is directed to an acidic hair dye composition comprising the specific lactones of the γ -hexanolactone or γ -heptanolactone. Applicants note, the claims have been amended to recite these specific lactone compounds. As the prior art of record fails to disclose or suggest these specific lactone compounds, the present invention is clearly not obvious from the reference as the reference fails to disclose the claim limitations of γ -hexanolactone or γ -heptanolactone.

The basic deficiencies of the primary references are not cured by Atsushi et al. EP 1,022,014 or Yoshihara et al. U.S. 5,332,581.

Neither of these references disclose or suggest the claim element of γ -hexanolactone or γ -heptanolactone.

EP 1,022,014, describes a hair cut dye composition comprising an acidic dye and an alkaline carbonate. There is no disclosure of the claimed elements of γ -hexanolactone or γ -heptanolactone.

Yoshihara et al. describes a fiber treating composition yet fails to disclose the claimed lactone compounds.

As the cited prior art of record fails to disclose or suggest the claimed lactone compositions, the present invention is clearly not obvious from these references and withdrawal of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

Applicants note, that Applicants' Information Disclosure Statement of April 22, 2003 included submission of JP 51-151,341 as well as an English language Abstract of the reference. Applicants enclose herewith a complete English translation of this reference. The reference describes an acid dye being used under acidic conditions caused by the presence of citric acid. A buffering capacity as claimed is not inherent to the disclosed composition as only citric acid is used, and not a buffering agent. While the examples include compositions containing lactones δ valerolactone or δ pentalactone (e.g., Examples 2 and 3), the reference fails to disclose or suggest the claimed lactone compositions of γ -hexanolactone or γ -heptanolactone. As such, the present invention is clearly not made obvious by this reference.

Finally, Applicants attach hereto, experimental data conducted by Mr. Masato Oshika, a researcher for Kao Corporation, the assignee of the above-identified application. The results of the four page document are summarized in the Table appearing on the first page, demonstrating dyeing properties for acidic hair dye compositions comprising an acidic dye and either γ -hexanolactone or γ -heptanolactone, as claimed, as well as other lactone containing compositions.

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Applicants submit this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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Table

	Formulation No., wt. %				
	1	2	3	4	5
Acid Black 1	0.1	0.1	0.1	0.1	0.1
Acid Violet 43	0.05	0.05	0.05	0.05	0.05
Acid Orange 7	0.1	0.1	0.1	0.1	0.1
γ -Butyrolactone (no substitution)	10	10	10	10	10
γ -Pentanolactone (C1 substituted)					
γ -Hexanolactone (C2 substituted)					
γ -Heptanolactone (C3 substituted)					
γ -Octanolactone (C4 substituted)					
γ -Nonanolactone (C5 substituted)					
Ethanol	5	5	5	5	5
Lactic acid	5	5	5	5	5
Caustic soda			q.s. to pH 3.0		
Hydroxyethylcellulose	1.5	1.5	1.5	1.5	1.5
Fragrance	0.2	0.2	0.2	0.2	0.2
Purified water			Balance		
Dyeing properties for goat's wool	D	D	A	A	B
Avoidability of skin staining	A	A	B	B	C
Wash-off readiness from skin	A	A	A	B	B

An acidic hair dye composition of the formulation shown in the Table was prepared, and various tests were conducted.

(1) Ranking method of dyeing properties for goat's wool

After the hair dye composition (1 g) was evenly applied to a tress of white goat's wool (1 g), the hair dye composition was permitted to remain in contact with the goat's wool for 15 minutes at 30°C. The thus-dyed tress was then washed with water, shampooed twice, rinsed once, and dried. By a panel of 20 experts, the tress was examined to determine the dyeing properties for the goat's wool. The examination results were ranked in accordance with the below-described ranking standards.

The results are presented in the Table.

Ranking standards

A: At least 80% of the experts found the dyeing properties for goat's wool to be good.

B: At least 50% but less than 80% of the experts found the dyeing properties for goat's wool to be good.

C: At least 20% but less than 50% of the experts found the dyeing properties for goat's wool to be good.

D: Less than 20% of the experts found the dyeing properties for goat's wool to be good.

(2) Ranking method of skin staining avoidability and wash-off

readiness

After the hair dye composition was evenly applied to the human forearm at a rate of 1 g per 10 cm², the hair dye composition was permitted to remain in contact with the forearm for 15 minutes at 30°C. The forearm was then washed with water to thoroughly remove the adhered hair dye composition from the skin of the forearm, and thereafter, the skin of the forearm was dried. By a panel of 20 experts, the forearm was examined to determine the avoidability of skin staining. The examination results were ranked in accordance with the below-described ranking standards.

The forearm was then cleaned with soap by massaging it 50 strokes, and dried. By the panel of 20 experts, the forearm was examined to determine the wash-off readiness. The examination results were also ranked in accordance with the below-described ranking standards. The results are presented in the Table.

Ranking standards

A: At least 80% of the experts found skin staining to be absolutely unnoticeable.

B: At least 50% but less than 80% of the experts found skin staining to be absolutely unnoticeable.

C: At least 20% but less than 50% of the experts found skin staining to be absolutely unnoticeable.

D: Less than 20% of the experts found skin staining to be
absolutely unnoticeable.